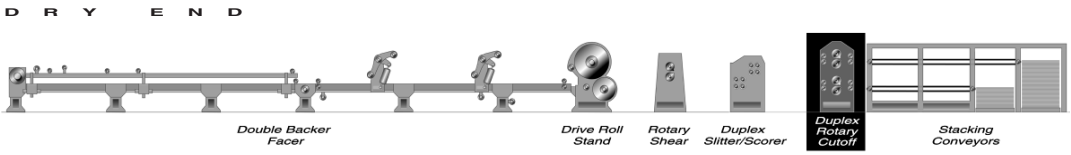
PULL ROLL

Smart Pull Roll Drive



UNICO

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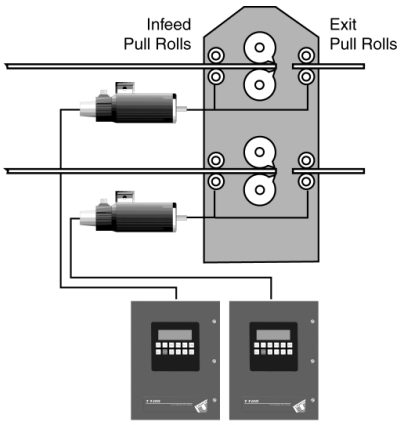
Overview

Unico's Smart Pull Roll Drive is a digital signal processor (DSP) based variable-speed drive with an embedded software block to control the infeed and exit pull rolls of a rotary cutoff. The program offers a number of programmable features that enable OEMs, integrators, and users to customize the functionality of the software to the application.

Features

Intelligent Web Tension Control

The drive intelligently regulates pull roll speed to maintain constant web tension at the infeed of the rotary cutoff. This minimizes length variation errors and eliminates the constant adjustment of roll pressure that can damage material or cause slippage. The drive runs in velocity mode with position-loop tuning to minimize velocity error while accelerating or decelerating, thereby eliminating web droop between the slitter/scorer and infeed pull roll sections.



Minimizes Roll Wear

The drive monitors dry-end conditions to provide a stable pull roll speed. This dramatically reduces roll wear and eliminates the needless expense and downtime of replacing worn-out rolls.

Controlled Tailout

Controlled speed and tension provide a smooth transition into an automatic order change (AOC), eliminating excessive cut length variation upon tailout. When the liners of the web come through loose or unglued, the pull roll maintains a tight web to prevent jams due to paper wadding. Since the drive has lineal tracking capability, it can sequence the slitter/scorer after the tail of the order using a digital output.

Modes of Operation

The embedded software has manual and automatic/run modes of operation. In manual mode, the drive can be jogged in both directions. In automatic/run mode, the drive can be operated in either slave mode or cruise mode. In slave mode, the drive follows either an analog speed reference or the signal from a machine-mounted encoder or another motor's encoder. In cruise mode, digital inputs command the drive to accelerate or decelerate, resume the previous speed, or go to a preset speed. Various dry-end sections and mechanical configurations may require a combination of both modes that can be accomplished using digital inputs. The ability to switch between modes on-the-fly is useful during an automatic order change.

Features *(continued)*

Flexibility and Ease of Use

The software allows the user to easily adjust the velocity and acceleration rates as well as to set up and tune the drive. Fault messages and warning indications are provided for the machine operator. An alphanumeric display shows current drive speed, drive state, and drive status. Analog outputs are available to provide other drives or controls with proportional references of drive speed and/or torque. The drive supports UEdit®, Unico's Windows-based IEC 1131 standard ladder-logic and function-block programming package that provides even greater customization and flexibility. The drive is ideal for retrofits, and seamlessly interfaces into existing logic and with other logic controllers.

Smart AC Digital Drives

Unico's 1000 and 2000 drive families provide powerful, flexible digital flux vector control for sophisticated, performance-oriented applications. The drives have been designed for complete flexibility and offer a variety of feedback, programmable I/O, and communication options. They incorporate a number of energy-conserving features, including line regenerative capabilities for exporting energy back to the power grid. Both drive families can take advantage of a modular DC bus configuration for sharing or recirculating energy among multiple drives.

Communication Protocols

The drive supports a variety of serial communication protocols for connecting to virtually any PLC or HMI. The drive can also operate in a stand-alone mode using the built-in keypad/display with an ANSI protocol connection to a simple serial display unit.

- CANopen
- CC-Link
- ControlNet
- DeviceNet
- Ethernet
- Interbus
- Modbus Plus
- Modbus RTU
- Profibus
- Remote I/O†
- RS-232/422/485

†*Supported only by the 2000 family platform*

Inputs & Outputs

All inputs and outputs are user-enabled and are mapped to hardware I/O points to allow customization of the control. They are also accessible through a high-speed serial communication link.

Inputs

- motor on request
- fault reset
- motion enable
- automatic/run mode
- jog forward
- jog reverse
- increase speed/accel
- decrease speed/decel
- resume speed
- velocity select 0
- velocity select 1
- velocity select 2
- velocity select 3
- tracking start
- blower motor OK

Outputs

- motor on grant
- no fault
- forward motion
- reverse motion
- automatic
- manual
- at zero velocity
- at requested velocity
- at max velocity
- no warning
- motor RMS warning
- thermal warning
- tracking preset

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